



Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For White Birch Garden

What is SWAP?

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources;
- Assess the susceptibility of drinking water sources to contamination from these land uses; and
- Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the
Massachusetts Department of
Environmental Protection,
Bureau of Resource Protection,
Drinking Water Program

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Table 1: Public Water System (PWS) Information

<i>PWS Name</i>	White Birch Garden
<i>PWS Address</i>	359 Main Street
<i>City/Town</i>	Hampden, Massachusetts
<i>PWS ID Number</i>	1120015
<i>Local Contact</i>	Robert Bergmann
<i>Phone Number</i>	(413) 598-8899

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well No. 1	1120015-01G	151	449	Moderate
Well No. 2	1120015-02G	151	449	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

White Birch Gardens are an apartment complex located in central Hampden. The wells for White Birch Garden are located north of Main Street and the facilities main buildings. Hampden does not have a municipal wastewater sewer system or a municipal water system. Therefore, the apartments are served by on-site septic disposal and two wells. Well No.1 and Well No. 2 were installed at the time of the original construction. Well No. 2 was recently, successfully hydrofractured to increase the yield. Both well are located north of and immediately adjacent to the buildings. Well #1 is a bedrock

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

well with a 6-inch diameter casing and is greater than 450 feet deep. Well #2 is also a 6-inch diameter well that is greater than 330 feet deep.

The apartments area located east of the valley border fault that separates the Jurassic sedimentary beds of the Connecticut River valley from the metamorphic (schist) rocks of the eastern highlands. The bedrock is mapped as a schist of the Erving Formation. Geologic mapping also indicates sand and gravel deposits in the immediate vicinity less than 50 feet deep. The sand and gravel is likely glacially outwash deposits that have been reworked and had recent alluvium deposited along the river valley.

The wells have Zone I radii of 151 feet and Interim Wellhead Protection Area radii of 449 feet. The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the wells may be significantly larger or smaller than the IWPA's. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone Is and IWPA's.

The wells serving the facility have no treatment at this time. The DEP requires public water suppliers to monitor the quality of the water. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Non-conforming Zone I;**
2. **Residential Land Uses; and,**
3. **Roads**

The overall ranking of susceptibility to contamination for the wells is moderate, based on

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Driveways/road and parking areas	Yes	Yes	Moderate	Limit road salt usage and provide drainage away from wells
Fuel Storage Above Ground	No	Yes	Moderate	Proper maintenance and upgrades to fuel oil tanks to prevent releases from occurring
Septic System	Yes	Yes	Moderate	See septic systems brochure in the appendix, relocate septic systems outside of Zone I
Lawn Care/Gardening	Yes	Yes	Moderate	Encourage residents in proper storage, disposal, and application of pesticides.
Stormwater Drains/Retention Basins	Yes	Yes	Low	Herbicides: over-application or improper handling; fuel storage, transported chemicals, and maintenance chemicals: leaks or spills

* -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I I. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

the presence of at least one moderate threat land use or activity in the Zone Is and IWPA's, as seen in Table 2.

1. Non-conforming Zone I – Currently, the wells do not meet DEP's restrictions, which only allow water supply related activities or non-threatening activities in Zone Is. The wells' Zone Is contains floor drains, driveways, parking spaces, and residences. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

Recommendations:

- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Direct driveway and parking lot drainage in the Zone I away from the wells.
- ✓ If possible relocate septic systems outside of the Zone I.

2. Residential Land Uses - The residences have on-site septic systems. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** - Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems lead to the ground. If septic systems fail or are not properly maintained, they can be a potential source of microbial contamination.
- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents.

Residential Land Use Recommendations:

- ✓ Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in

Appendix A and on the MA DEP website page www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.

- ✓ Promote BMPs for stormwater management and pollution controls.

3. Roads - Major roads are potential sources of contamination due to salting of roadways and leaks or spills of fuels and other hazardous materials during accidents.

Recommendation:

- ✓ Contact local fire department to ensure that the IWPA's are included in Emergency Response Planning.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to

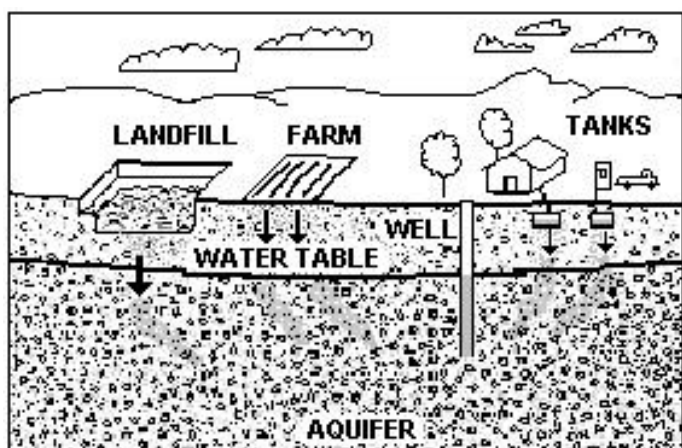


Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws/, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and town boards.

contamination. White Birch Garden is commended for raising the elevation of the wellheads, posting signs in the Zone I, and educating tenants on wellhead protection issues. White Birch Garden should review and adopt the key recommendations above and the following:

Priority Recommendations:

- ✓ Develop an updated Emergency Response Plan and submit a copy to the DEP.
- ✓ Relocate septic systems outside of the Zone I, as is feasible.
- ✓ Direct driveway and parking lot drainage in the Zone I away from the wells.

Zone I:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Continue to protect the wellheads from damage.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Conduct regular inspections of the Zone I.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, and certified operator. Post labels as appropriate on raw materials and hazardous waste.

Facilities Management:

- ✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility properties.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis.
- ✓ For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Planning:

- ✓ Work with local officials in town to include the facility's IWPA's in Aquifer Protection District Bylaws if the town establishes such bylaws in the future.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Work with your community to ensure that stormwater runoff is directed away from the wells and is treated according to DEP guidance.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. If funds are available, each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding

opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at the MA DEP website: <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure